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Woodsia Mexicana, Fée.—The *Woodsia* from Lower California mentioned in my Distribution Notes as likely to be *W. obtusa* proves to be this species instead.

Mr. Orcutt has now re-collected it and supplied me with sufficient material to render its positive determination reasonably certain.

My thanks are due to Mr. Orcutt for his kindness in this, and also for his efforts to procure for me other ferns, in which I trust he will yet meet with equal success.

Notes on the Flora of Yellowstone Park.

By FRANK TWEEDY.

There is probably not an area of equal size in the United States which has as varied topographical features as the region of the Yellowstone Park, with its elevated plateaux and lofty mountain ranges, cañons, rivers and cataracts. Here also is the great continental water-shed. The central portion is mainly a high, rolling, heavily timbered plateau varying from 7,500–8,500 feet above sea-level and bordered by mountain ranges on the west, north and east. It is to this interior region and to a few adjacent mountain summits that the following observations were limited. On travelling through the Park one is struck by the monotony of the forests as regards variety in species. The black pine (*Pinus contorta*, Dougl., var. *Murrayana*, Engelm.) is the prevailing tree at low altitudes, forming at least 90 per cent. of the forest area, mingled with a scanty growth of Douglas spruce (*Pseudotsuga Douglasii*, Engelm.) on sparsely wooded slopes. The latter are small and not to be compared with the noble tree of the Pacific coast. We were surprised at the general absence of the yellow pine (*Pinus ponderosa*, Dougl.), but probably the rainfall is too great for the healthy development of this species. Above 8,000 feet, and even lower, dependent upon situation as regards temperature and moisture, occur the spruce (*Picea Engelmanni*, Engelm.) and the fir (*Abies subalpina*, Engelm.). The latter, much resembling the eastern balsam fir in growth and habit, clothes the cold, wet mountain slopes up to the timber-line, which here is nearly 1,000 feet. The black pine is not entirely confined to the plateau region, but often ascends to the timber-line along the dryer ridges where it is frequently found with the western white pine (*Pinus flexilis*, James). A few red cedars are scattered over the sage-brush areas, and *Juniperus communis*, L., var. *alpina*, L., on alpine summits and more rarely around the geyser basins. A birch (*Betula occidentalis*) and the aspen (*Populus tremuloides*, Michx.) are mostly confined to moist bottoms along streams. Early in August we occupied a camp in a small opening, half bog, half meadow, on the eastern slope of the Gallatin Range. On either side were the fir-clad slopes of high mountain peaks. Scattered over the meadow were patches of low willows (*Salix Geyeriana*, Anders.) and birches (*Betula glandulosa*, Michx.) mingled with great quantities of *Potentilla fruticosa*, L., the most characteristic shrub of the mountain bogs. Blue gentians were massed in great profusion over the surface of the bog, *Gentiana serrata*, Gunner, everywhere, *G. Forwoodii*, Gray, and *G. amarella*, L., var. *acuta*, Hook., less

common, yellow senecios (*S. lugens*, Rich., and *S. subnudus*, DC.) and white flowers of various species. *Zygadenus elegans*, Pursh., *Antennaria carpathica*, R. Br., *Trifolium longipes*, Nutt., *Polygonum viviparum*, L., *Parnassia fimbriata*, Banks, and *Habenaria hyperborea*, R. Br. *Pedicularis* was represented by several species, *P. Grœnlandica*, Retz, *P. bracteosa*, Benth., and *P. racemosa*, Dougl. *Valeriana edulis*, Nutt., is a characteristic bog plant of the region. Hidden by this luxuriant growth were the more modest *Stellaria* (*S. borealis*, Big., *S. longipes*, Goldie, *S. umbellata*, Turcz., *S. crassifolia*, Ehrh.) and *Androsaces* (*A. filiformis*, Retz, *A. septentrionalis*, L.). One of the most striking plants was a large cream-colored *Wyethia* (*W. helianthoides*, Nutt.), the species upon which Nuttall founded the genus. Grasses there were in abundance, many of the most nutritious kinds: the native timothy (*Phleum alpinum*, L.), *Deyeuxia Langsdorfii*, Trin., the blue joint of the region, *Poa Nevadensis*, Vasey, var. *glauca*, V. & S., a characteristic meadow grass, several species of *Bromus* (*B. brevaristatus*, Hook., *B. ciliatus*, *B. Kalmii*, Gray), *Danthonia*, *Melica*, *Trisetum*, *Festuca*, *Glyceria*, etc., all of which our horses and mules seemed to appreciate highly in the odd moments they snatched from fighting the myriads of gnats and immense horse-flies during the day time and the equally numerous and more persistent mosquitos at morning and evening. On the ascent of Mount Holmes the following day, new beauties and varieties in the flora met our gaze on every hand. The little streams tumbling down the grassy slopes of the mountain side were bordered with flowers growing with weed-like luxuriance, waist deep, blue *Mertensia* (*M. Sibirica*, Don.), yellow *Aquilegia* (*A. flavescens*, Wats.), white and crimson geraniums (*G. Richardsonii*, F. & M., *G. incisum*, F. & M.), the showy *Mimulus Lewisii*, Pursh., and above all waved the wand-like stems of aconites and larkspurs (*Aconitum Fischeri* and *Delphinium scopulorum*, Gray). On the borders of the scattered groves of fir were banks of melting snow, and over the cold wet ground around them were growing several pretty little alpine plants. Two clovers (*Trifolium Parryi*, Gray, and *T. Kingii*, Wats.), a dwarf *Ranunculus* with large, golden-yellow flowers (*R. affinis*, R. Br.), a prostrate *Mertensia* (*M. alpina*, Don.) and a delicate little aster very appropriately bearing the name of *Aster pulchellus*, Eaton.

A steep ascent of several hundred feet brought us upon an elevated plateau where a scene of great beauty burst upon our view. Spread out before us was a magnificent natural flower-garden, vivid scarlet and crimson *Castilleja* vied with purple lupines and carpet-like masses of snow-white phlox (*P. Douglasii*, Hook.) mingled with golden-yellow and orange flowers of every shade, *Helianthella Douglasii*, T. & G., *Ivesia Gordoni*, T. & G., *Sedum stenopetalum*, Pursh., arnicas and *Aplopappi*. A large-flowered *Townsendia* (*T. Parryi*, Eaton) was a conspicuous feature of the flora. Besides these there were *Clematis Douglasii*, Hook., the pretty *Cerastium arvense*, L., and erigerons and asters of several species. On reaching the bare summit of the mountain at an altitude of 10,000 feet, we stood for some moments gazing upon the panorama of the Park spread out before us. To the southward extended a rolling sea of dark green forest, broken

here and there by the white surfaces of the geyser basins, from which at intervals clouds of steam would shoot upwards, telling us of some geyser in eruption. Over the plateau below us were several elk leisurely making their way, and on a peak near by we watched a band of Rocky Mountain sheep travelling along what seemed to us to be the face of an almost perpendicular precipice. The bleak wind which swept the summit that we occupied hardly seemed favorable to plant-life other than the hardy lichens and mosses, and yet its flora proved to be quite extensive and varied, as the following species, collected over an area of a few square rods, will show: *Douglasia montana*, Gray., *Salix reticulata*, L., *Draba crassifolia*, Graham, *D. alpina*, L., *Smelowskia calycina*, *Myosotis sylvatica*, Hoffm., var. *alpestris*, Koch., *Eritrichium nanum*, Schroder, var. *aretioides*, Herder., *Arenaria stricta*, Wats., *Silene acaulis*, L., *Saxifraga oppositifolia*, L., *Oxytropis Lamberti*, Pursh., *Astragalus tegetarius*, Wats., var. *implexus*, Canby., *Dryas octopetala*, L., *Sibbaldia procumbens*, L., *Antennaria alpina*, Gaertn., *Artemisia scopulorum*, Gray., *Erigeron uniflorus*, L., *E. radicans*, Hook.

In the treacherous hot spring bogs throughout the Park one will meet with a peculiar flora containing many species which are more or less familiar sea-coast plants, such as *Ranunculus Cymbalaria*, Pursh., *Potentilla Anserina*, L., *Rumex maritimus*, L., *Potamogeton pectinatus* (L.?) *Ruppia maritima*, L., and *Triglochin maritimum*, L.

There is a characteristic plant of the region, *Cnicus Drummondii*, Gray, which has a little romance connected with it in spite of its unprepossessing appearance. In 1870 one of a band of explorers in the then unknown region which is now the Yellowstone Park became separated from his companions and wandered alone for thirty-seven days through the dense forests and over the mountains, and was only saved from starvation by the nourishment derived from the roots of this thistle.

Contributions toward a List of the State and Local Floras of the United States.

THE INDIAN TERRITORY.

Catalogue of Plants collected in the Exploration, by Capt. R. B. Marcy, of the Red River. By John Torrey. (C.)

Washington, 1853. Appendix G.

List of some of the most interesting Plants collected in the Indian Territory. By G. D. Butler. (B.)

In Bot. Gazette iii., 1878, Logansport, Ind.

CATALOGUES OF TRANSCONTINENTAL EXPEDITIONS.

Descriptions of new Species and Genera of Plants in the Natural Order Compositæ, collected in a tour across the Continent to the Pacific, a Residence in Oregon, and a visit to the Sandwich Islands and Upper California during the years 1834 and 1835. By Thomas Nuttall. (D.)

In Trans. Amer. Philos. Soc. vii. (new series) 282.

List of Plants collected on a Military Reconnoissance from Fort Leavenworth, Mo., to San Diego, Cal. By John Torrey, M. D. (C.)